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# Alternative Energy

Different energy is any energy source that is an alternative to [fossil fuel](https://en.wikipedia.org/wiki/Fossil_fuel). These alternatives are intended to address concerns about such fossil fuels, such as its high [carbon dioxide emissions](https://en.wikipedia.org/wiki/Carbon_dioxide_emissions), an important factor in [worldwide warming](https://en.wikipedia.org/wiki/Global_warming" \o "Global warming). [Marine energy](https://en.wikipedia.org/wiki/Marine_energy), [hydroelectric](https://en.wikipedia.org/wiki/Hydroelectric_power), [wind](https://en.wikipedia.org/wiki/Wind_power), [geothermal](https://en.wikipedia.org/wiki/Geothermal_power)and [solar power](https://en.wikipedia.org/wiki/Solar_power) are all alternative [sources of energy](https://en.wikipedia.org/wiki/Energy_source).

The nature of what constitutes an alternative energy source has changed considerably over time, as have controversies regarding energy use. Because of the variety of energy choices and differing goals of their advocates, defining some energy types as "alternative" is considered very controversial.[[1]](https://en.wikipedia.org/wiki/Alternative_energy#cite_note-Zehner_2012-1)

Historians of economies have examined the key transitions to alternative energies and regard the transitions as pivotal in bringing about available economic change.[8][9][10] Prior to the shift to an alternative energy, supplies of the dominant energy type became unpredictable , accompanied by rapid increases in energy prices.

## Coal as an alternative to wood

In the late medieval period, coal was the new alternative fuel to save the society from overuse of the dominant fuel, wood. The deforestation had resulted in shortage of wood, at that time soft coal appeared as a savior. Historian Norman F. Cantor describes how:

"Europeans had lived in the midst of vast forests throughout the earlier medieval centuries. After 1250 they became so skilled at deforestation that by 1500 AD they were running short of wood for heating and cooking... By 1500 Europe was on the edge of a fuel and nutritional disaster, [from] which it was saved in the sixteenth century only by the burning of soft coal and the cultivation of potatoes and maize."[11]

## Petroleum as an alternative to whale oil

Whale oil was the dominant form of lubrication and fuel for lamps in the early 19th century, but the depletion of the whale stocks by mid century caused whale oil prices to skyrocket setting the stage for the adoption of petroleum which was first commercialized in Pennsylvania in 1859.[12]

## Ethanol as an alternative to fossil fuels

In 1917, Alexander Graham Bell advocated ethanol from corn, wheat and other foods as an alternative to coal and oil, stating that the world was in measurable distance of depleting these fuels. For Bell, the problem requiring an alternative was lack of renewability of orthodox energy sources.[13] Since the 1970s, Brazil has had an ethanol fuel program which has allowed the country to become the world's second largest producer of ethanol (after the United States) and the world's largest exporter.[14] Brazil’s ethanol fuel program uses modern equipment and cheap sugar cane as feedstock, and the residual cane-waste (bagasse) is used to process heat and power.[15] There are no longer light vehicles in Brazil running on pure gasoline. By the end of 2008 there were 35,000 filling stations throughout Brazil with at least one ethanol pump.[16]

Cellulosic ethanol can be produced from a diverse array of feedstocks, and involves the use of the whole crop. This new approach should increase yields and reduce the carbon footprint because the amount of energy-intensive fertilizers and fungicides will remain the same, for a higher output of usable material.[17][18] As of 2008, there are nine commercial cellulosic ethanol plants which are either operating, or under construction, in the United States.[19]

Second-generation biofuels technologies are able to manufacture biofuels from inedible biomass and could hence prevent conversion of food into fuel."[20] As of July 2010, there is one commercial second-generation (2G) ethanol plant Inbicon Biomass Refinery, which is operating in Denmark.[21]

## Coal gasification as an alternative to petroleum

In the 1970s, President Jimmy Carter's administration advocated coal gasification as an alternative to expensive imported oil. The program, including the Synthetic Fuels Corporation was scrapped when petroleum prices plummeted in the 1980s. The carbon footprint and environmental impact of coal gasification are both very high.[citation needed]

# Ecotourism

## Basic Information

Ecotourism is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low-impact and often small scale alternative to standard commercial mass tourism. It means responsible travel to natural areas conserving the environment and improving the well-being of the local people.[1] Its purpose may be to educate the traveler, to provide funds for ecological conservation, to directly benefit the economic development and political empowerment of local communities, or to foster respect for different cultures and for human rights. Since the 1980s, ecotourism has been considered a critical endeavor by environmentalists, so that future generations may experience destinations relatively untouched by human intervention.[2]:33 Several university programs use this description as the working definition of ecotourism.[3]

Generally, ecotourism deals with interaction with biotic components of the natural environments.[4] Ecotourism focuses on socially responsible travel, personal growth, and environmental sustainability. Ecotourism typically involves travel to destinations where flora, fauna, and cultural heritage are the primary attractions. Ecotourism is intended to offer tourists an insight into the impact of human beings on the environment and to foster a greater appreciation of our natural habitats.

Responsible ecotourism programs include those that minimize the negative aspects of conventional tourism on the environment and enhance the cultural integrity of local people. Therefore, in addition to evaluating environmental and cultural factors, an integral part of ecotourism is the promotion of recycling, energy efficiency, water conservation, and creation of economic opportunities for local communities.[5] For these reasons, ecotourism often appeals to advocates of environmental and social responsibility. The term 'ecotourism', like 'sustainable tourism', is considered by many to be an oxymoron. Like most forms of tourism, ecotourism generally depends on air transportation, which contributes to global climate change. Additionally, "the overall effect of sustainable tourism is negative where like ecotourism philanthropic aspirations mask hard-nosed immediate self-interest."[6]

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| **LESSON** | **TOPIC** | **ASSIGNMENT** | **POINTS** | **DUE** |
| 1 | What is distance learning? | Wiki #1 | 10 | March 10 |
| Presentation | 20 |  |
| 2 | History&Theories | Brief Paper | 20 | March 24 |
| Spring Break | | | | |
| 3 | Distance Learners | Discussion #1 | 10 | April 7 |
| Group Project | 50 | April 14 |
| 4 | Media Selection | Blog #1 | 10 | April 21 |

# Recycling

## Recycling of waste materials and waste energy

Recycling is the process of converting waste materials into new materials and objects. It is an alternative to "conventional" waste disposal that can save material and help lower greenhouse gas emissions (compared to plastic production,[1][2] for example). Recycling can prevent the waste of potentially useful materials and reduce the consumption of fresh raw materials, thereby reducing: energy usage, air pollution (from incineration), and water pollution (from landfilling).

Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" waste hierarchy.[3][4]

There are some ISO standards related to recycling such as ISO 15270:2008 for plastics waste and ISO 14001:2004 for environmental management control of recycling practice.

Recyclable materials include many kinds of glass, paper, and cardboard, metal, plastic, tires, textiles, and electronics. The composting or other reuse of biodegradable waste—such as food or garden waste—is also considered recycling.[2] Materials to be recycled are either brought to a collection center or picked up from the curbside, then sorted, cleaned, and reprocessed into new materials destined for manufacturing.

In the strictest sense, recycling of a material would produce a fresh supply of the same material—for example, used office paper would be converted into new office paper or used polystyrene foam into new polystyrene. However, this is often difficult or too expensive (compared with producing the same product from raw materials or other sources), so "recycling" of many products or materials involves their reuse in producing different materials (for example, paperboard) instead. Another form of recycling is the salvage of certain materials from complex products, either due to their intrinsic value (such as lead from car batteries, or gold from circuit boards), or due to their hazardous nature (e.g., removal and reuse of mercury from thermometers and thermostats).

# Ozone Hole

## History of Ozone

Ozone depletion describes two related phenomena observed since the late 1970s: a steady decline of about four percent in the total amount of ozone in Earth's stratosphere (the ozone layer), and a much larger springtime decrease in stratospheric ozone around Earth's polar regions.[1] The latter phenomenon is referred to as the ozone hole. There are also springtime polar tropospheric ozone depletion events in addition to these stratospheric phenomena.

The main cause of ozone depletion and the ozone hole is man-made chemicals, especially man-made halocarbon refrigerants, solvents, propellants, and foam-blowing agents (chlorofluorocarbon (CFCs), HCFCs, halons), referred to as ozone-depleting substances (ODS). These compounds are transported into the stratosphere by the winds after being emitted at the surface.[2] Once in the stratosphere, they release halogen atoms through photodissociation, which catalyze the breakdown of ozone (O3) into oxygen (O2).[3] Both types of ozone depletion were observed to increase as emissions of halocarbons increased.

Ozone depletion and the ozone hole have generated worldwide concern over increased cancer risks and other negative effects. The ozone layer prevents most harmful UVB wavelengths of ultraviolet light (UV light) from passing through the Earth's atmosphere. These wavelengths cause skin cancer, sunburn, and cataracts, which were projected to increase dramatically as a result of thinning ozone, as well as harming plants and animals. These concerns led to the adoption of the Montreal Protocol in 1987, which bans the production of CFCs, halons, and other ozone-depleting chemicals.

The ban came into effect in 1989. Ozone levels stabilized by the mid-1990s and began to recover in the 2000s. Recovery is projected to continue over the next century, and the ozone hole is expected to reach pre-1980 levels by around 2075.[4] The Montreal Protocol is considered the most successful international environmental agreement to date.

# Green Revolution

## Agricultural Revolution

The Green Revolution, or Third Agricultural Revolution, refers to a set of research and the development of technology transfer initiatives occurring between the 1930s and the late 1960s (with prequels in the work of the agrarian geneticist Nazareno Strampelli in the 1920s and 1930s), that increased agricultural production worldwide, particularly in the developing world, beginning most markedly in the late 1960s.[1] The initiatives resulted in the adoption of new technologies, including:

...new, high-yielding varieties (HYVs) of cereals, especially dwarf wheats and rices, in association with chemical fertilizers and agro-chemicals, and with controlled water-supply (usually involving irrigation) and new methods of cultivation, including mechanization. All of these together were seen as a 'package of practices' to supersede 'traditional' technology and to be adopted as a whole.[2]

## Basic Information

Both the Ford Foundation and the Rockefeller Foundation were heavily involved.[3] One key leader was Norman Borlaug, the "Father of the Green Revolution", who received the Nobel Peace Prize in 1970. He is credited with saving over a billion people from starvation. The basic approach was the development of high-yielding varieties of cereal grains, expansion of irrigation infrastructure, modernization of management techniques, distribution of hybridized seeds, synthetic fertilizers, and pesticides to farmers.

The term "Green Revolution" was first used in a March 8, 1968 speech by the administrator of the U.S. Agency for International Development (USAID), William S. Gaud, who noted the spread of the new technologies: "These and other developments in the field of agriculture contain the makings of a new revolution. It is not a violent Red Revolution like that of the Soviets, nor is it a White Revolution like that of the Shah of Iran. I call it the Green Revolution."[4][5]

# Η Οικογένεια μου